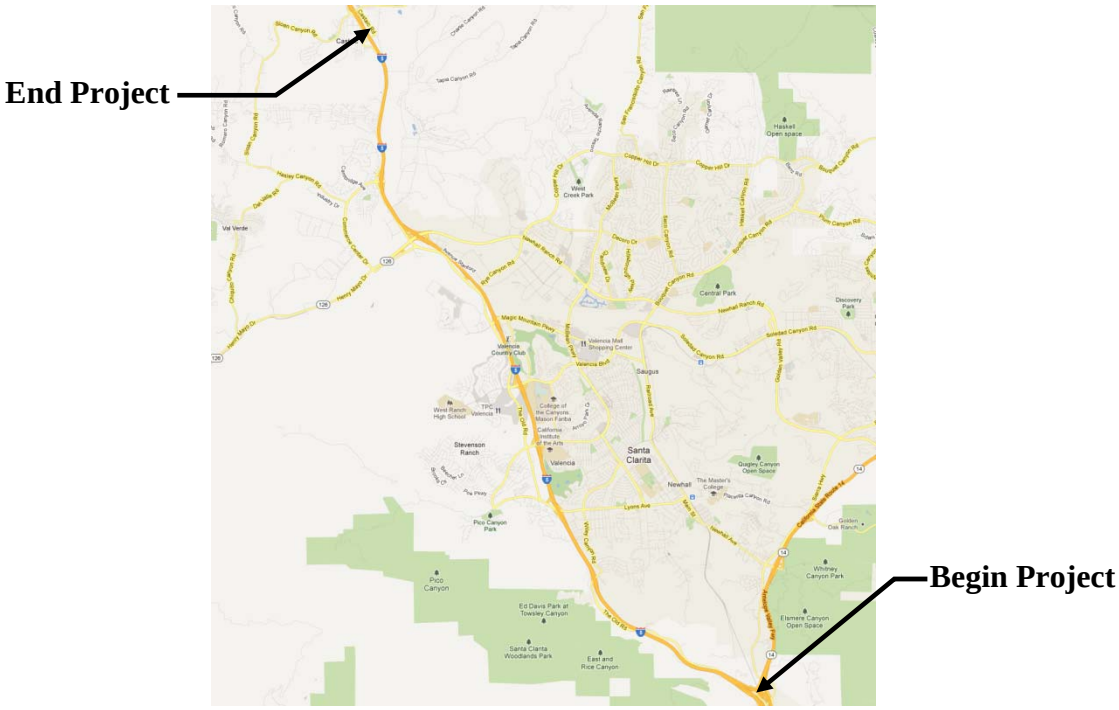
Qualitative $PM_{2.5}$ and PM_{10} Hot-Spot Analysis

HIGH OCCUPANCY LANES



Interstate 5, Post Miles R45.4 to R59.0
IN LOS ANGELES COUNTY, CALIFORNIA
FROM STATE ROUTE 14
TO PARKER ROAD

Caltrans EA: 07-2332E
Project ID: LA0G440

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Division of Planning, Public Transportation, and Local Assistance
Office of Environmental Engineering and Corridor Studies

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Introduction

The United States Environmental Protection Agency (EPA) promulgated the National Ambient Air Quality Standard (NAAQS) for particulate matter on July 18, 1997, establishing a standard for particulate matter less than or equal to 2.5μm in size ($PM_{2.5}$). The EPA then published their final rule on PM designations and classifications in the Federal Register on January 5, 2005, and established areas designated as nonattainment, unclassifiable or attainment/classifiable. In March 2006, the EPA published a final rule that established the transportation conformity criteria and procedures (71FR12468) as well as the *"Transportation Conformity Guidance for Qualitative Hot-Spot Analyses in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas"* (March 2006 Guidance), which provides guidance and summarizes requirements for hot-spot analyses for projects in maintenance and nonattainment areas. The EPA later revised the level of the 24-hour $PM_{2.5}$ standard to 35 micrograms per cubic meter ($\mu g/m^3$) (71FR61144) in October 2006.

The March 2006 final rule requires a qualitative $PM_{2.5}$ and PM_{10} hot-spot analysis to be completed for a project of air quality concern (POAQC). The final rule in 40 CFR 93.123(b)(1) defines the POAQC as:

(i) New or expanded highway projects that have a significant number of or significant increase in diesel vehicles;
(ii) Projects affecting intersections that are at Level-of-Service (LOS) D, E, or F with a significant number of diesel vehicles, or those that will change to LOS D, E, or F because of increased traffic volumes from a significant number of diesel vehicles related to the project;
(iii) New bus and rail terminals and transfer points that have a significant number of diesel vehicles congregating at a single location;
(iv) Expanded bus and rail terminals and transfer points that significantly increase the number of diesel vehicles congregating at a single location; and
(v) Projects in or affecting locations, areas, or categories of sites which are identified in the $PM_{2.5}$ and PM_{10} applicable implementation plan or implementation plan submission, as appropriate, as sites of violation or possible violation.

The project under study in this Qualitative $PM_{2.5}$ and PM_{10} Hot-Spot analysis (Analysis) proposes to widen and provide a high occupancy lane in each direction of travel approximately from State Route 14 (SR-14) to Parker Road. Based on the current and forecast traffic data, the I-5 corridor within the limits of the project currently experiences and is projected to have a significant number of diesel vehicles. The project is therefore considered to be of air quality concern as described in 40 CFR 93.123(b)(1)(i); and requires this Analysis.

This Analysis has been prepared according to the procedures and methodology provided in the March 2006 Guidance jointly published by EPA and FHWA; and does not include dispersion analysis discussed in the December 2010 *Transportation Conformity Guidance for Quantitative Hot-Spot Analyses in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas* (Quantitative Guidance) since it is prepared within the grace period allowed.

Project Description and Location

I-5 is a major north/south freeway connecting the states of California, Oregon, and Washington, and a major commuter route from the Santa Clarita Valley into the southern Los Angeles area. The area within the project limits is surrounded by mountainous terrain, and is therefore a geographically constrained area. As such there is no direct alternate freeway route to I-5 in the city of Santa Clarita. A local arterial, The Old Road, runs parallel and adjacent to the I-5 freeway within the study limits.

In addition to serving as a major commuter facility, it is also the region's primary goods movement artery. It is part of the Interstate System of highways and is used as a major local and regional truck route. I-5 is listed as a "high-priority corridor" on the National Highway System (NHS), serving inter-regional commodities and vehicular travel in the north-south direction from California's most southern border with Mexico to its most northern border with Oregon. It is also listed on the State Highway Extra Legal Load (SHELL) Route system. These systems list those highways that have been constructed to accommodate the high volume and weight of interstate and intrastate truck traffic. Within the project limits, I-5 is classified as an urban freeway, and it functions as the gateway to and from the Los Angeles Basin to central and northern California. As a result of this unique characteristic of spanning the entire state, the interstate in the north Los Angeles County area experiences high volumes of traffic, including truck traffic.

The existing I-5 facility within the project limits currently provides generally four mixed-flow lanes in each direction with the exception of through the midpoint of the I-5/SR-14 interchange, where there are three mixed-flow lanes in each direction. Two truck lanes in each direction pass through the I-5/SR-14 interchange area, separated from the mainline freeway. Within the project limits, this truck bypass route begins (in southbound direction) or ends (in northbound direction) just north of the I-5/SR-14 interchange consisting of ±5 percent grade.

I-5 experiences greater automobile and truck congestion as a result of population growth in the northern Los Angeles County and goods movement into and out of the Ports of Los Angeles and Long Beach. Freeway traffic volumes are expected to continue growing, resulting in delays. This project is proposed to achieve the following objectives:

- Reduce delays to vehicles caused by slower-moving trucks through the hilly southern portion of this segment of I-5;
- Improve operational and safety design features to facilitate the movement of people, freight, and goods on the project segment; and
- Reduce existing forecast traffic congestion on the project segment of I-5 to accommodate planned growth within the study area.

The proposed project is located in a fast-growing area within the Santa Clarita Valley, which is located in the northernmost portion of Los Angeles County where I-5 meets the Antelope Valley Freeway (SR-14). The topography of the Valley consists of rolling hills within the middle of the Valley, with the Santa Clara River flowing through the center to steep hillside and canyons stretching to the north, south, and east. The Angeles National Forest contains much of the Valley to the far north and south, with the west bordering Ventura County and the east following the SR-14 to Acton and Antelope Valley.

The communities affected by the proposed project include the City of Santa Clarita (City) and unincorporated areas of Los Angeles County, namely Valencia, Newhall, Stevenson Ranch, and Castaic (County).

Existing land uses in the City and County along the I-5 include a mixture of open space, residential, industrial, and commercial uses. The southern portion of the study area to the west of I-5, from SR-14 junction to Calgrove Boulevard, is undeveloped with mostly vacant land and a small residential use area of mobile homes south of Calgrove Boulevard adjacent to The Old Road.

The central portion of the project limits between Calgrove Boulevard and Magic Mountain Parkway account for most of the development in the project area. The community of Stevenson Ranch consists of both single and multifamily residential uses, with pockets of commercial/office uses. The City lies east of I-5 with the communities of Newhall to the south of Lyons Avenue and Valencia to the north, which consist primarily of residential uses with a small portion of commercial and industrial uses. Residential land uses between Calgrove Boulevard and Lyons Avenue include a mobile home park and single-family residences. Commercial developments are located along Lyons Avenue and Magic Mountain Parkway at the I-5 intersection. Several recreation facilities and the California Institute of the Arts and the College of Canyons occupy the undeveloped open space areas between Lyons Avenue and Magic Mountain Parkway.

The Six Flags Magic Mountain Theme Park is located west of I-5 and south of the Santa Clara River in the unincorporated Los Angeles County portion of Valencia and is a major commercial and amusement use. The Santa Clara River crosses the project area north of Magic Mountain Parkway. The Valencia Industrial Center, a large concentration of light industrial uses, is located east of I-5 within the City limits. Agricultural land uses exist west of I-5 close to the SR-126 intersection.

The northern portion of the project area is within the unincorporated Los Angeles County (Castaic) with the exception of a small amount of vacant land east of I-5 between SR-126 and Castaic Creek. Immediately north of this vacant land is a large area of agricultural use adjacent to I-5. Other uses in this area within the community of Castaic include the Pitchess Detention Center, Castaic County Sports Complex, residential use and vacant land to the west of I-5 with small areas of agricultural, industrial, and commercial uses. Valencia Commerce Center, located at the junction of SR-126 and I-5, provides industrial use within this unincorporated County area of the Santa Clarita Valley. Respective land uses along the I-5 corridor and schools are identified in Figure 1.

An Environmental Impact Report/Environmental Assessment (EIR/EA) that led to a Notice of Determination/Finding of No Significant Impact (NOD/FONSI) was prepared and approved by Caltrans in September 2009. Caltrans is currently in the process of preparing an Environmental Re-evaluation for the proposed project. This Analysis is being performed to meet the EPA's requirements in its March 10, 2006 final rule regarding a qualitative PM hot-spot analysis.

Caltrans is considering alternative improvement strategies along the I-5 corridor between SR-14 and Parker Road. As part of this Analysis, the following alternatives are analyzed:

No-Build Alternative – The existing number of general purpose lanes (four in each direction) are assumed. In addition, the existing truck lanes (from the SR-14 junction to south of Calgrove Boulevard in both southbound and northbound directions) and approved truck lanes currently under construction (to Pico Canyon Road) are included in the No-Build analysis.

High Occupancy Toll (HOT) Lane Alternative – The existing number of general purpose lanes (four in each direction) and truck lanes are assumed. This alternative includes the addition of one HOT lane in each direction along the I-5 Freeway between SR-14 and Parker Road. This alternative also includes the addition of northbound auxiliary lanes between Valencia Boulevard and Magic Mountain Parkway, and between Calgrove Boulevard and Pico Canyon Road/Lyons Avenue; and southbound auxiliary lanes between Valencia Boulevard and McBean Parkway. Four ingress/egress locations are provided along the corridor to access the HOT lane as follows: 1) the north egress and ingress point at Post Mile 59.0; 2) SR-126 (Newhall Ranch Road) access at Post Mile 55.5; 3) McBean Parkway access at Post Mile 51.4; and 4) the south egress and ingress point at Post Mile 45.4.

High Occupancy Vehicle (HOV) Lane Alternative – The existing number of general purpose lanes (four in each direction) and truck lanes (both existing and under construction) are assumed. This alternative includes the addition of one HOV lane (2+ shared ride occupants) in each direction along the I-5 corridor between SR-14 and Parker Road. This alternative also includes the addition of northbound auxiliary lanes between Valencia Boulevard and Magic Mountain Parkway, and between Calgrove Boulevard and Pico Canyon Road/Lyons Avenue; and southbound auxiliary lanes between Valencia Boulevard and McBean Parkway. Ingress/egress along the HOV lane is provided at each ramp location along the I-5 corridor.

The proposed project is currently in environmental re-evaluation with target dates to commence construction in 2014; and to complete construction by 2018. Traffic data are projected to 2018 and 2035 to demonstrate fully developed traffic conditions following the opening of completed facilities and to consider the life of the proposed project within the current planning horizon year of 2035. The analysis years are selected to demonstrate conformity in the years during which peak emissions are expected based on the background concentration and anticipated increase in traffic volumes after the project is completed; and when worsening of PM conditions are expected with the traffic that is anticipated to grow during the life of the project.

The project is identified in the latest conforming 2012 Regional Transportation Plan (RTP) and in the 2011 Federal Transportation Improvement Program (FTIP) with Amendments as LA0G440 with the following description:

> Construct HOV lane northbound from Route 14 to Weldon Canyon Rd; Construct HOV, truck, & aux lanes from SR - 14 to Parker Rd OC

The 2012 RTP was adopted by Southern California Association of Governments (SCAG) on April 4, 2012; and was found to conform by the FHWA on June 4, 2012. The 2011 FTIP was adopted by SCAG on September 2, 2010; and the FHWA made its conformity determination on December 14, 2010. The Amendment to FTIP (Amendment #11-30) was adopted by SCAG on July 20, 2012; and the conformity determination was made by FHWA on October 24, 2012. The proposed

project is identified as a Transportation Control Measure (TCM) and its timely implementation is a crucial element in reducing air pollutant emissions from roadway transportation sources.

$PM_{2.5}$ and PM_{10} Hot-Spot Analysis Methodology

The project is located within the South Coast Air Basin (SCAB) which is designated as nonattainment of federal standards for $PM_{2.5,}$ PM_{10}, and 8-hour ozone among others. The project is considered to be of air quality concern as discussed above. A qualitative hot-spot analysis for $PM_{2.5}$ and PM_{10} is therefore deemed necessary to satisfactorily meet the conformity requirements in accordance with EPA's March 10, 2006 final rule. Caltrans is currently in the process of preparing an environmental reevaluation for the proposed project.

A hot-spot analysis is defined in the 40CFR93.101 as an estimation of likely future localized pollutant concentrations and a comparison of those concentrations to the relevant air quality standards. A project-level hot-spot analysis assesses the air quality impacts on a scale smaller than an entire nonattainment or maintenance area such as a congested freeway corridor. Such an analysis is a means of demonstrating that a transportation project meets Clean Air Act (CAA) conformity requirements to support state and local air quality goals with respect to potential localized air quality impacts.

CAA Section 176(c)(1)(B) is the statutory criterion that must be met by all projects in nonattainment and maintenance areas that are subject to transportation conformity. Section 176(c)(1)(B) states that federally supported transportation projects must not "cause or contribute to any new violation of any standard in any area; increase the frequency or severity of any existing violation of any standard in any area; or delay timely attainment of any standard or any required interim emission reductions or other milestones in any area."

The EPA in its March 2006 Guidance has established the following two methods for completing $PM_{2.5}$ and PM_{10} hot-spot analyses:

A. Comparison to another location with similar characteristics,

B. Air quality studies for the proposed project location.

This Analysis uses a combined approach to demonstrate that the proposed project would not result in a new $PM_{2.5}$ or PM_{10} violation, worsen any existing violation, or delay attainment.

Types of Emissions Considered

In accordance with the March 2006 Guidance, this Analysis will be based on directly emitted $PM_{2.5}$ and PM_{10} emissions and will consider tailpipe, brake wear, and tire wear $PM_{2.5}$ and PM_{10} emissions. Precursors of particulate matter and secondary particles are not considered in this Analysis; but they are considered as part of the regional emission analysis prepared for the conforming RTP and TIP.

Vehicles cause dust from paved and unpaved roads to be re-entrained, or re-suspended, in the atmosphere. According to the March 2006 final rule, road dust emission are to be considered for PM_{10} hot-spot analysis, and road dust emissions for $PM_{2.5}$ are to be considered in the hot-spot

analyses only if the EPA or the state air agency has made a finding that such emissions are a significant contributor to the air quality problem (40CFR93.102(b)(3)). The South Coast Air Quality Management District (SCAQMD) has prepared and adopted in June 2007, a Final 2007 Air Quality Management Plan (Final 2007 AQMP) in which the paved road dust ranks high among the top ten categories of directly emitted $PM_{2.5}$ in the SCAB. The California Air Resources Board (CARB) incorporated the adopted 2007 AQMP for the SCAB as part of their State Implementation Plan (SIP) for $PM_{2.5}$. EPA has since approved the emissions inventory; reasonably available control measures/technology demonstration; reasonable further progress; and attainment demonstrations in November 2011 (76FR69928) while disapproving the SIP's contingency measures and related issues are being resolved.

A Draft 2012 AQMP has recently been released for public review. As with the Final 2007 AQMP, the Draft 2012 AQMP also ranks paved road dust as one of top ten categories for directly emitted $PM_{2.5}$. Therefore, the re-entrained $PM_{2.5}$ road dust has been considered in this Analysis.

According to the project schedules, the construction will not last more than 5 years. Construction-related emissions due to this project are considered temporary as defined in 40 CFR 93.123(c)(5); and thus are not included in this Analysis. This project will comply with the SCAQMD Fugitive Dust Rules (Rule 403) for any fugitive dusts emitted during the construction. Excavation, transportation, placement, and handling of excavated soils shall result in no visible dust migration. A water truck or tank will be available within the project limits at all times to suppress and control the migration of fugitive dusts from earthwork operations. The project is required comply with any state, federal, and/or local rules and regulations developed as a result of implementing control and mitigation measures proposed as part of their respective SIPs.

National Ambient Air Quality Standard

Nonattainment and maintenance areas are required to attain and maintain two standards for $PM_{2.5}$ as follows:

- 24-hour standard: 65 micrograms per cubic meter ($\mu g/m^3$) (1997 Standard)

  35 $\mu g/m^3$ (2006 Standard)
- Annual standard: 15 $\mu g/m^3$.

The 24-hour standard is based on a 3-year average of the 98th percentile of 24-hour $PM_{2.5}$ concentrations; and, the annual standard is based on a 3-year average of annual mean $PM_{2.5}$ concentrations.

Nonattainment and maintenance areas are required to attain and maintain the following standard for PM_{10}:

- 24-hour standard: 150 $\mu g/m^3$.

The 24-hour PM_{10} standard is attained when the average number of exceedance in the previous three calendar years is less than or equal to 1. The annual PM_{10} standard of 50 $\mu g/m^3$ is no longer used for determining the federal attainment status.

Meteorology and Climate

The climate in and around the project area, as with all of Southern California, is controlled largely by the strength and position of the subtropical high-pressure cell over the Pacific Ocean. In general, it maintains relatively moderate temperatures and comfortable humidity, and limits precipitation to a few storms during the winter "wet" season. Within the SCAB, temperatures are normally mild, except in the summer months, which commonly bring substantially higher temperatures. In all portions of the SCAB, temperatures above 100 degrees Fahrenheit have been recorded in recent years. Annual Mean temperature in the vicinity of the proposed project (at Newhall meteorology station, No. 046161) is approximately 64.8 degrees Fahrenheit, averaged over three decades between 1981 and 2010.

Winds in the project area are usually driven by the dominant land/sea breeze circulation system. Regional wind patterns are dominated by daytime onshore sea breezes. At night the wind generally slows and reverses direction traveling towards the sea. Wind directions alter by presence of local canyons, with wind tending to flow parallel to the canyons. During the transition period from one wind pattern to another, the dominant wind direction rotates into the south. The frequency of calm winds (less than 2 miles per hour) is approximately 0.32 percent. Therefore, there is little stagnation in the project vicinity, especially during busy daytime traffic hours. Figure 2 illustrates wind patterns at Santa Clarita – Placerita monitoring station approximately 2 miles east of the proposed project.

Southern California frequently has temperature inversions that inhibit the dispersion of pollutants. Inversions may be either ground based or elevated. Ground based inversions, sometimes referred to as radiation inversions, are most severe during clear, cold, early winter mornings. Under conditions of a ground-based inversion, very little mixing or turbulence occurs, and high concentrations of primary pollutants may occur local to major roadways. Elevated inversions can be generated by a variety of meteorological phenomena. Elevated inversions act as a lid or upper boundary and restrict vertical mixing. Below the elevated inversion, dispersion is not restricted. Mixing heights for elevated inversions are lower in the summer and more persistent. This low summer inversion puts a lid over the SCAB and is responsible for the high levels of ozone observed during summer months in the SCAB.

The 30-year average temperature, from 1981 to 2010, using data obtained from the Western Region Climate Center's Newhall meteorological station (#046161) shows the wintertime low of 44.0 degrees Fahrenheit in February. The summertime high is averaged at 92.9 degrees Fahrenheit in August. The rainfall season is from October to April with an annual average of 17.90 inches.

Ambient Concentration Data

An ambient air monitoring station (Santa Clarita – Placerita station) within the SCAQMD network is located approximately 2 mile northeast of the I-5 and approximately 1.8 mile northwest from SR-14. Although the Santa Clarita – Placerita station is located relatively close to the proposed project, it does not monitor $PM_{2.5}$. Ambient $PM_{2.5}$ data were therefore obtained from the Burbank monitoring station, and were reviewed to establish the current ambient background level within the project limits and to help evaluate future localized pollutant concentrations as affected by the proposed projects.

The Burbank monitoring station is located approximately 0.35 miles southwest of I-5; and is approximately 15.5 miles southeast of the proposed project. Figure 3 illustrates the proximity of this monitoring station to the freeway and to the proposed project. Tables 1 through 3 summarize traffic data for the portion of I-5 in close proximity to the Burbank monitoring station; and provide comparison to the existing and forecast traffic along the I-5 within the project limits.

Table 1. Existing traffic data (2010)

Location	ADT		% Truck
	Total	Truck	
I-5 near Burbank monitoring station (North of JCT SR-170, Post Mile 27.08)	240,000	16,560	6.90
I-5 within the project limits (Post Mile 44.9 to 59)	104,756 – 203,256	17,502 – 25,269	10.9 – 18.5

Source: Caltrans Traffic Data Branch at http://www.dot.ca.gov/hq/traffops/saferesr/trafdata/index.htm

Table 2. Traffic forecast for the Alternatives (Opening year in 2018)

	ADT		% Truck
	Total	Truck	
No-Build	125,765 – 224,441	20,363 – 30,247	10.8 – 17.5
HOT	127,536 – 231,759	21,923 – 33,453	11.4 – 19.9
HOV	127,536 – 231,759	23,059 – 34,695	11.6 – 20.4

Source: Traffic Technical Report by LSA Associates, October 2012

Table 3. Traffic forecast for the Alternatives (Horizon year in 2035)

	ADT		% Truck
	Total	Truck	
No-Build	148,264 – 251,775	36,354 – 55,672	16.0 – 26.3
HOT	150,146 – 259,507	36,499 – 56,689	15.9 – 27.5
HOV	150,146 – 259,507	38,886 – 59,785	16.4 – 28.4

Source: Traffic Technical Report by LSA Associates, October 2012

As presented in the tables above, the portion of I-5 within the project limits, currently experiences total volumes lower than the portion of I-5 near the Burbank monitoring station, but with higher truck volumes. However, with the implementation of the proposed project, this portion of I-5 is projected to accommodate the level of traffic comparable to the portion of I-5 in the vicinity of the Burbank monitoring station while the truck volumes increase.

The Burbank station is located in a densely populated area with mixed commercial and residential uses. The land use pattern along the proposed project includes large portions of vacant or undeveloped lands with pockets of residential, commercial, and light to restricted industrial based on the aerial and review of the Final EIR/FONSI approved in 2009.

Table 4 summarizes ambient $PM_{2.5}$ and PM_{10} data monitored at the Burbank and Santa Clarita – Placerita monitoring stations; and provides a comparison between the levels of ambient PM_{10} concentrations at both monitoring stations. As noted in the table, ambient PM_{10} concentrations

were measured higher at the Burbank monitoring station than at the Santa Clarita – Placerita station for most of the last 6-year period. Based on the comparison of the traffic volumes, land uses, and the proximity to the freeway, the ambient concentration data measured at the Burbank monitoring station are thus deemed representative for comparison to the proposed project. Figure 4 illustrates and compares these ambient concentrations to the current federal standards.

Table 4. Ambient $PM_{2.5}$ and PM_{10} Monitoring Data at Santa Clarita – Placerita and Burbank Stations

(Measurements in μg/m^3)	2006	2007	2008	2009	2010	2011
$PM_{2.5}$ 24-hour average[a]	43	50	35	34	32	34
$PM_{2.5}$ annual average[a]	16.5	16.9	13.9	14.3	12.4	13.2
PM_{10} 24-hour average (First Max)[a]	71	109	66	80	51	61
PM_{10} 24-hour average (First Max)[b]	53	131	91	56	40	45

Source: EPA AirData at http://www.epa.gov/airquality/airdata/

Note: [a] measured at the Burbank monitoring station

[b] measured at the Santa Clarita – Placerita station

The ambient concentration data indicate that measurements at the Burbank station did not exceed the 1997 federal 24-hour $PM_{2.5}$ standard of 65 μg/m^3 in the past six years; but exceeded the 2006 standard of 35 μg/m^3 from 2006 to 2008. The data, meanwhile, shows a generally decreasing and stabilizing trend of 24-hour $PM_{2.5}$ concentrations with time. The annual average $PM_{2.5}$ concentrations at the Burbank station exceeded the federal annual $PM_{2.5}$ standard of 15 μg/m^3 in 2006 and 2007, but no annual exceedance occurred since then. The annual average $PM_{2.5}$ concentrations also exhibit a generally decreasing and stabilizing trend over the last six years. This downward trend in the ambient concentrations of $PM_{2.5}$ at the Burbank station is consistent with the projections in the Final 2007 AQMP. The recently-released Draft 2012 AQMP also predicts a downward trend in $PM_{2.5}$ emissions and anticipates attainment of the federal 24-hour $PM_{2.5}$ standard by 2014 with all feasible control programs. It should be noted, however, that the Draft 2012 AQMP is currently in review and subject to further revisions and approval by EPA.

PM_{10} data presented in Table 4 shows that the monitored values for the 24-hour measurements did not exceed and were all well below the federal standard of 150 μg/m^3 in the past six years at both monitoring stations.

Traffic Conditions and Changes Due to the Project

Table 5 provides a snapshot of the current traffic conditions by providing daily average volumes, truck percentages, and speeds along the I-5 within the project limits. It should be noted that the current year traffic conditions below have been obtained based on the SCAG model.

Table 5. Daily traffic data for the current facility (2010)

Daily Volume	% Truck	Average Speeds, MPH				
		AM	Mid Day	PM	Evening	Night
147,593	14.9	32	70	33	70	70

Source: Traffic Technical Report by LSA Associates, October 2012

Tables 6 and 7 below summarize future average daily traffic volumes, truck percentages, and speeds forecast along the I-5 within the project limits. While traffic projections were conducted by LSA in 9 individual segments within the project limits, the data are shown in the tables as averages over these segments. According to Tables 6 and 7, all the build alternatives (HOT and HOV) are anticipated to result in improvements in vehicle speeds while accommodating about 2 percent increase in the overall traffic volumes.

Table 6. Traffic forecast for opening year, 2018

	Daily Volume	Truck %	Average Speeds, MPH				
			AM	Mid Day	PM	Evening	Night
No-Build	170,237	14.9	52	70	55	70	70
HOT	158,903 MF 14,744 HOT	16.0	60 MF 64 HOT	70 MF 70 HOT	61 MF 66 HOT	70 MF 70 HOT	70 MF 70 HOT
HOV	165,990 MF 7,657 HOV	16.7	55 MF 70 HOV	70 MF 70 HOV	57 MF 70 HOV	70 MF 70 HOV	70 MF 70 HOV

Source: Traffic Technical Report by LSA Associates, October 2012

Table 7. Traffic forecast for build-out year, 2035

	Daily Volume	Truck %	Average Speeds, MPH				
			AM	Mid Day	PM	Evening	Night
No-Build	196,924	22.5	43	70	44	70	70
HOT	181,929 MF 18,369 HOT	22.8	56 MF 63 HOT	70 MF 70 HOT	55 MF 63 HOT	70 MF 70 HOT	70 MF 70 HOT
HOV	192,072 MF 8,226 HOV	23.9	46 MF 69 HOV	70 MF 70 HOV	49 MF 70 HOV	70 MF 70 HOV	70 MF 70 HOV

Source: Traffic Technical Report by LSA Associates, October 2012

Traffic conditions along the I-5 corridor and within the surrounding areas were considered in estimating direct and re-entrained $PM_{2.5}$ and PM_{10} emissions. Figure 5 illustrates the surrounding area and limits from where these traffic conditions were collected. The summary in Table 8 indicates that the implementation of the project alternatives results in increase in HOV traveling while reducing traveling on arterials and local streets.

Table 8. Summary of Vehicle Miles Traveled for I-5 Corridor and Surrounding Areas

		FWY/Ramps	HOV	Expressway/ Principal Arterial	Minor Arterial	Collectors
2010	**Current**	3,355,874	1,153,333	1,020,734	688,101	343,760
2018	**No-Build**	3,642,864	1,150,095	945,935	853,973	402,243
	HOT	3,504,472	1,326,984	942,807	842,978	397,657
	HOV	3,586,330	1,245,126	942,807	842,978	397,657
2035	**No-Build**	4,096,847	1,222,106	1,061,366	965,573	474,743
	HOT	3,913,163	1,446,922	1,057,387	950,913	466,499
	HOV	4,033,806	1,326,278	1,057,387	950,913	466,499

Source: Traffic Technical Report by LSA Associates, October 2012

$PM_{2.5}$ and PM_{10} Emissions

CT-EMFAC is utilized in estimating current and future project-level $PM_{2.5}$ and PM_{10} emissions for the project alternatives. CT-EMFAC is designed to model criteria pollutants, including $PM_{2.5}$ and PM_{10}, using the ARB's mobile source emissions inventory, EMFAC2007. EMFAC2007 is currently the latest version of emissions inventory made available by the EPA for use in conformity analyses for projects in California.

This Analysis also provides estimate of re-entrained road dust according to the latest EPA's AP-42 method (dated January 2011, noted below) and based on the ARB's default values of silt loading and average vehicle weight for the Los Angeles County portion of the SCAB.

$$E = k(sL)^{0.91} \times (W)^{1.02}$$

Direct and re-entrained $PM_{2.5}$ and PM_{10} emissions are estimated using the current and future traffic data obtained for 9 individual segments along the I-5 corridor within the project limits. Another set of direct and re-entrained $PM_{2.5}$ and PM_{10} emissions are estimated based on the current and future traffic data obtained for the surrounding area illustrated in Figure 5. A summary of direct and re-entrained $PM_{2.5}$ and PM_{10} emissions data along the I-5 corridor as well as for within the surrounding area is presented in Table 9.

Table 9. Summary of the current and future PM10 and PM2.5 emissions estimate

Emissions in lb/day		Project Corridor				Surrounding Area			
		PM_{10}		$PM_{2.5}$		PM_{10}		$PM_{2.5}$	
		Direct	Re-ent	Direct	Re-ent	Direct	Re-ent	Direct	Re-ent
2010	Current	241.6	325.1	167.1	81.3	726.1	2,331.3	481.4	582.8
2018	No-Build	233.7	376.4	153.8	94.1	687.6	2,650.2	434.6	662.6
	HOT	240.0	383.6	158.3	95.9	696.3	2,636.3	438.7	659.1
	HOV	241.6	383.6	159.6	95.9	696.9	2,636.3	439.0	659.1
2035	No-Build	271.7	434.1	176.4	108.5	737.2	2,982.8	447.9	745.7
	HOT	265.3	441.4	168.6	110.3	733.2	2,961.9	446.8	740.5
	HOV	267.9	441.4	171.0	110.3	735.4	2,961.9	448.5	740.5

Source: Based on Traffic Technical Report by LSA Associates, October 2012

A summary of $PM_{2.5}$ and PM_{10} emissions in Table 9 indicates that the implementation of the project alternatives would result in increase in $PM_{2.5}$ and PM_{10} emissions along the proposed I-5 corridor when compared to the No-Build scenario. Traffic volumes are projected to increase by about 2% when the HOV or HOT lanes are added. It should be noted also that the Build Alternatives propose to improve speeds along the I-5 corridor and to increase person-carrying efficiency with the proposed high occupancy lanes.

The effect of implementing the project alternatives is better captured in the emissions estimate from within the surrounding, but localized, areas illustrated in Figure 5. As summarized in Table 8, VMTs for the project alternatives are anticipated to remain relatively unchanged with increase by only about 0.2 percent in the surrounding area when compared to the No-Build scenario. Future

forecast for all alternatives, in the mean time, result in increase in VMT by about 7 percent in 2018 and by 19 percent in 2035 when compared to the existing conditions in 2010. In the mean time, combined direct and re-entrained PM_{10} and $PM_{2.5}$ emissions for all project alternatives are anticipated to decrease when compared to the No-Build in all the analysis years. Reduction in PM_{10} and $PM_{2.5}$ emissions within the surrounding area is consistent across the project alternatives with varying degrees, with the HOT Alternative resulting in slightly higher reduction in emissions.

CONCLUSIONS

Transportation conformity is required under CAA Section 176(c) to ensure that federally supported highway and transit project activities are consistent with the purpose of the SIP. Conformity to the purpose of the SIP means that transportation activities will not cause new air quality violations, worsen existing violations, or delay timely attainment of the relevant AAQS. As required by the March 10, 2006 final rule, this Analysis demonstrates that the projects meet the CAA conformity requirements to support state and local air quality goals with respect to potential localized air quality impacts as indicated below.

Historical meteorology and climate data support that the regional and local meteorological and climatic conditions have been relatively consistent within the last 30 years and likely consistency is anticipated through the horizon year of 2035. In addition, no significant changes are anticipated in the current general terrain and geographic locations of the projects in relation to the coastal SCAB areas.

Based on the traffic data presented, the current ADT and truck volumes along the I-5 near the Burbank monitoring station are comparable to those forecast along the proposed I-5 corridor within the project limits. Based on the recent data at the Burbank monitoring station, there is a generally declining and stabilizing trend of ambient $PM_{2.5}$ concentrations. In addition, PM_{10} concentrations monitored at the Burbank and Santa Clarita – Placerita stations have all been well below the federal standard. Based on the Final 2007 AQMP and in the Draft 2012 AQMP, further decrease in $PM_{2.5}$ and PM_{10} emissions is expected to continue in future years so that attainment of the federal 24-hour $PM_{2.5}$ standard is anticipated by 2014 with feasible control programs.

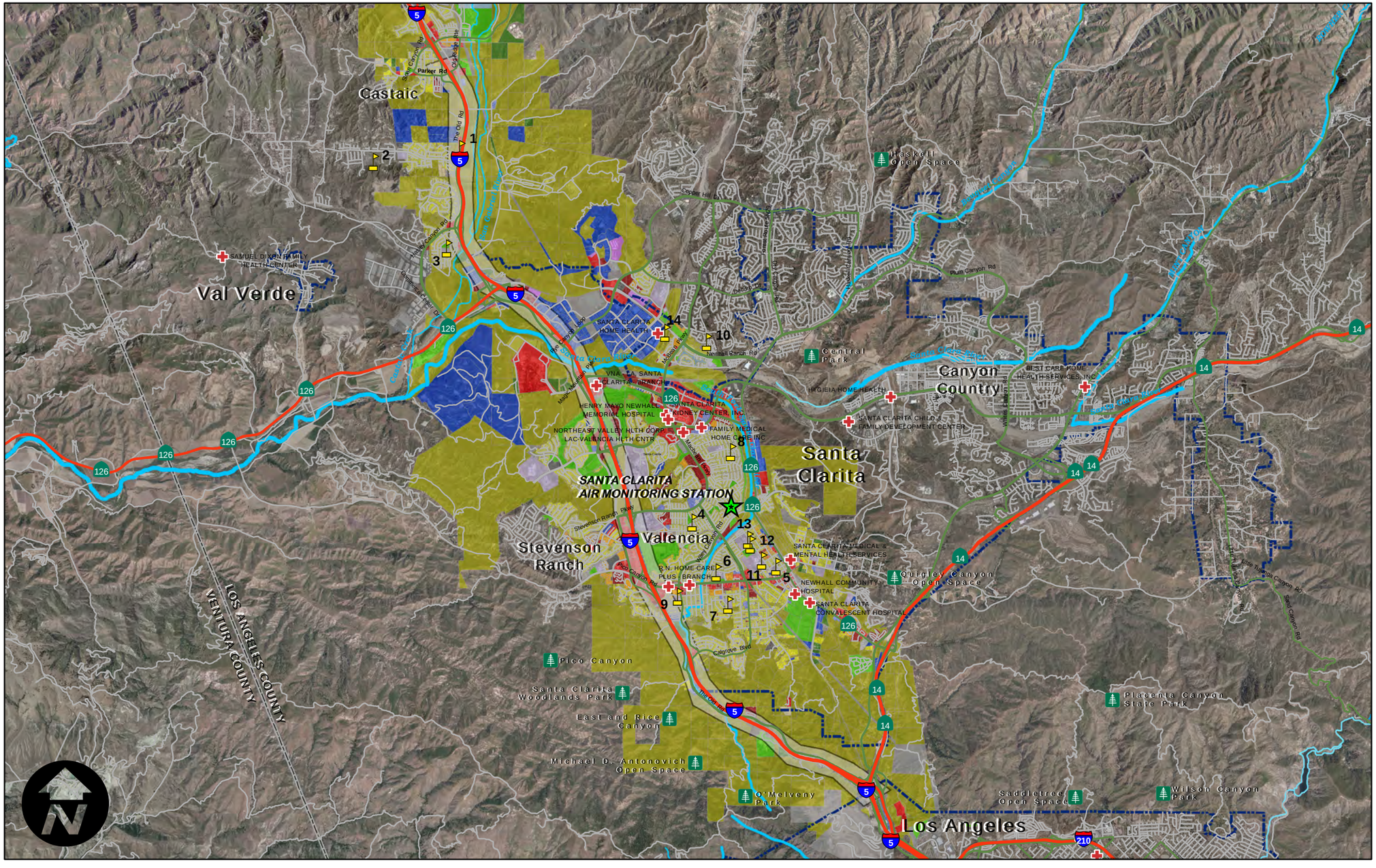
Federal regulations and the State's Diesel Risk Reduction Plan require future diesel vehicles to have substantially cleaner engines and to use fuels with lower sulfur contents. Many federal and state regulations, such as CARB's Truck and Bus Regulations, require that emissions from heavy duty trucks be reduced in future years. These federal and state requirements would help further reduce $PM_{2.5}$ and PM_{10} emissions in the future by essentially lowering per-vehicle emissions for each of the diesel vehicles.

As summarized in Tables 6 and 7, overall average traffic volumes along the I-5 project corridor are projected to increase with the implementation of the project alternatives. Also as indicated in Table 8, implementation of the project alternatives would result in slight increase in the overall VMTs within the surrounding area. Despite the increase in the overall VMTs, implementation of the project alternatives would result in lowering emissions of combined $PM_{2.5}$ and PM_{10} in the surrounding area when compared to the No-Build. This decrease in the PM emissions in the surrounding area is anticipated because the project alternatives propose to improve operations to

facilitate the movement of people, freight, and goods; reduce congestion along the I-5 corridor; and affect traffic distribution in the surrounding area.

The historical meteorology and climate data, ambient concentrations and their declining trends, and the Federal regulations and the State's Plan and Regulations, support the assertion that the projects will not cause new air quality violations, worsen existing violations, or delay timely attainment of the relevant NAAQS. Activities of the project alternatives should, therefore, be considered consistent with the purpose of the SIP and it should be concurred that the project conforms to the requirements of the CAA.

Figures



Legend

Schools

1. Castaic Elementary
2. Castaic Middle
3. Live Oak Elementary
4. Meadows Elementary
5. Newhall Elementary
6. Old Orchard Elementary
7. Peachland Avenue Elementary
8. Valencia Valley Elementary
9. Wiley Canyon Elementary
10. Helmers (Charles) Elementary
11. Hart (William S.) Senior High
12. Learning Post High (Alter.)
13. Placerita Junior High
14. Valencia High

Parks

Healthcare Facilities

Highways

Proposed Project

Landuse

- Single Family Residential
- Multi-Family Residential
- Other Residential
- General Office
- Commercial and Services
- Facilities
- Education
- Military Installations
- Industrial
- Transportation, Communications, and Utilities
- Mixed Commercial and Industrial
- Mixed Urban
- Open Space and Recreation
- Agriculture
- Vacant
- Water
- Under Construction
- Undevelopable
- Unknown

FIGURE 1. SENSITIVE RECEPTOR MAP
INTERSTATE 5 FROM ROUTE 14 TO PARKER ROAD
California Department of Transportation District 7, Los Angeles

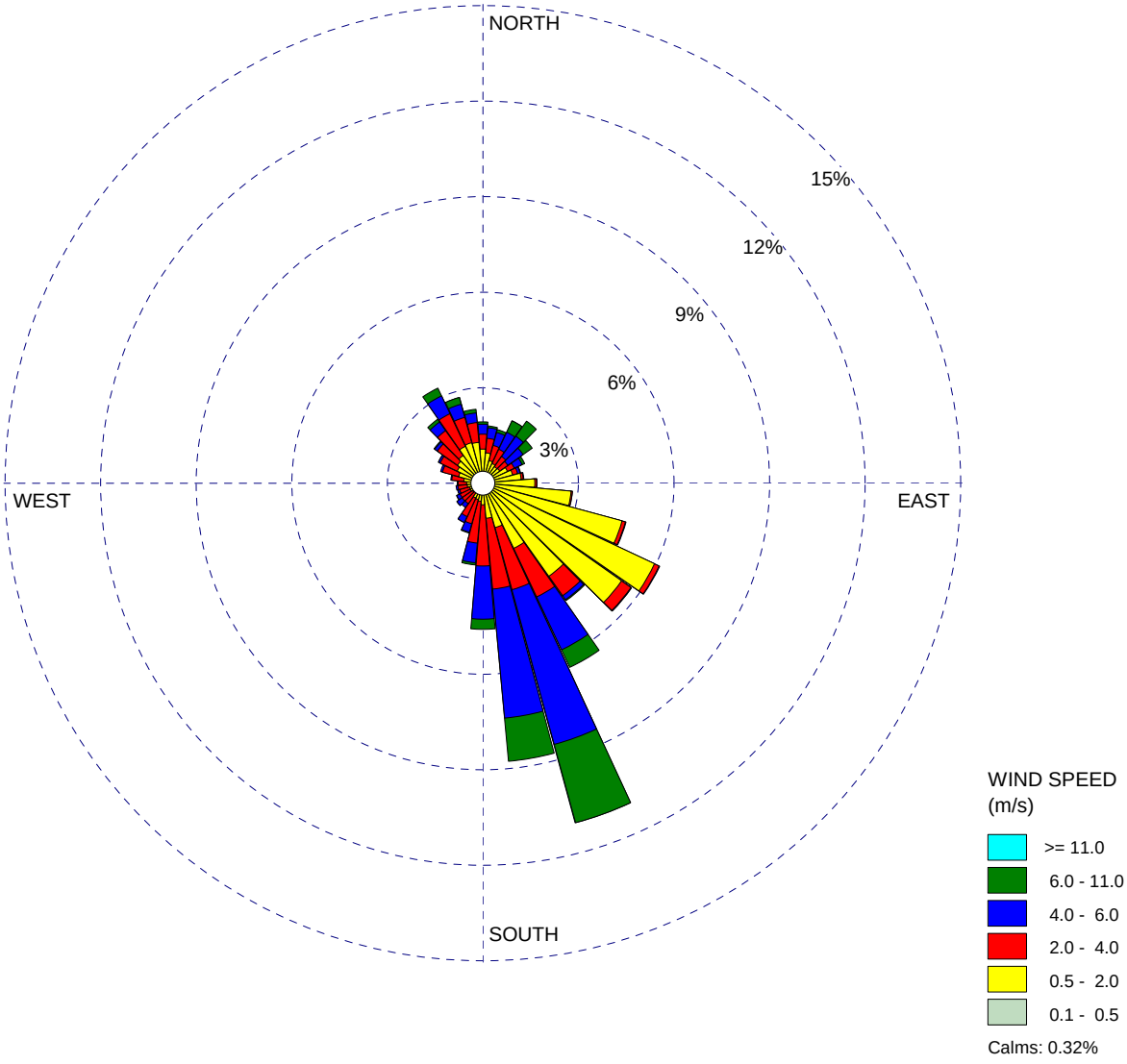
Caltrans

WIND ROSE PLOT:

sclr

DISPLAY:

Wind Speed
Direction (blowing from)



COMMENTS:	DATA PERIOD: **2005-2007 Jan 1 - Dec 31 00:00 - 23:00**	COMPANY NAME:	
		MODELER:	Figure 2
	CALM WINDS: **0.32%**	TOTAL COUNT: **26197 hrs.**	
	AVG. WIND SPEED: **2.76 m/s**	DATE: **1/28/2009**	PROJECT NO.:

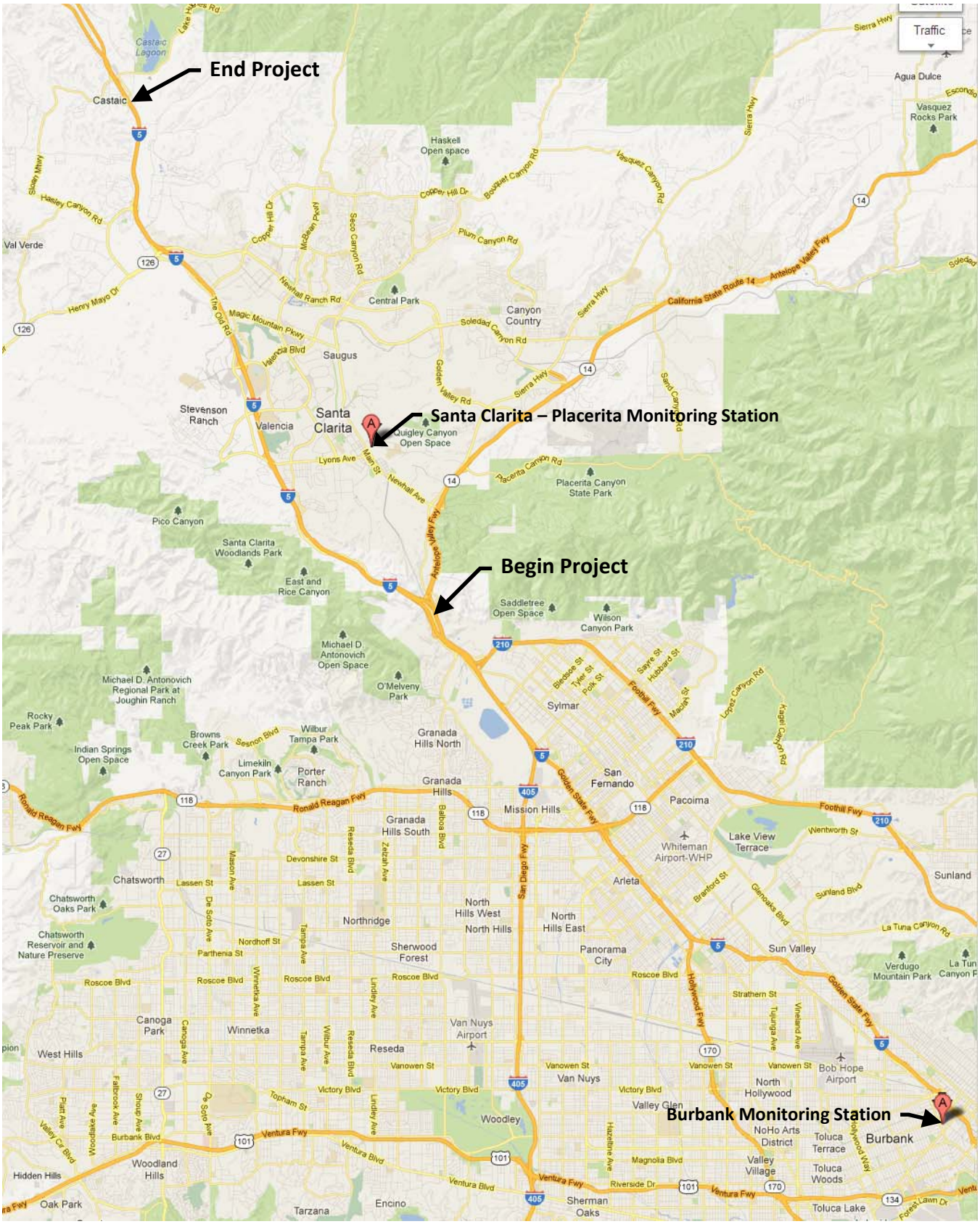


Figure 3. Location of Air Monitoring Stations and Project Limits

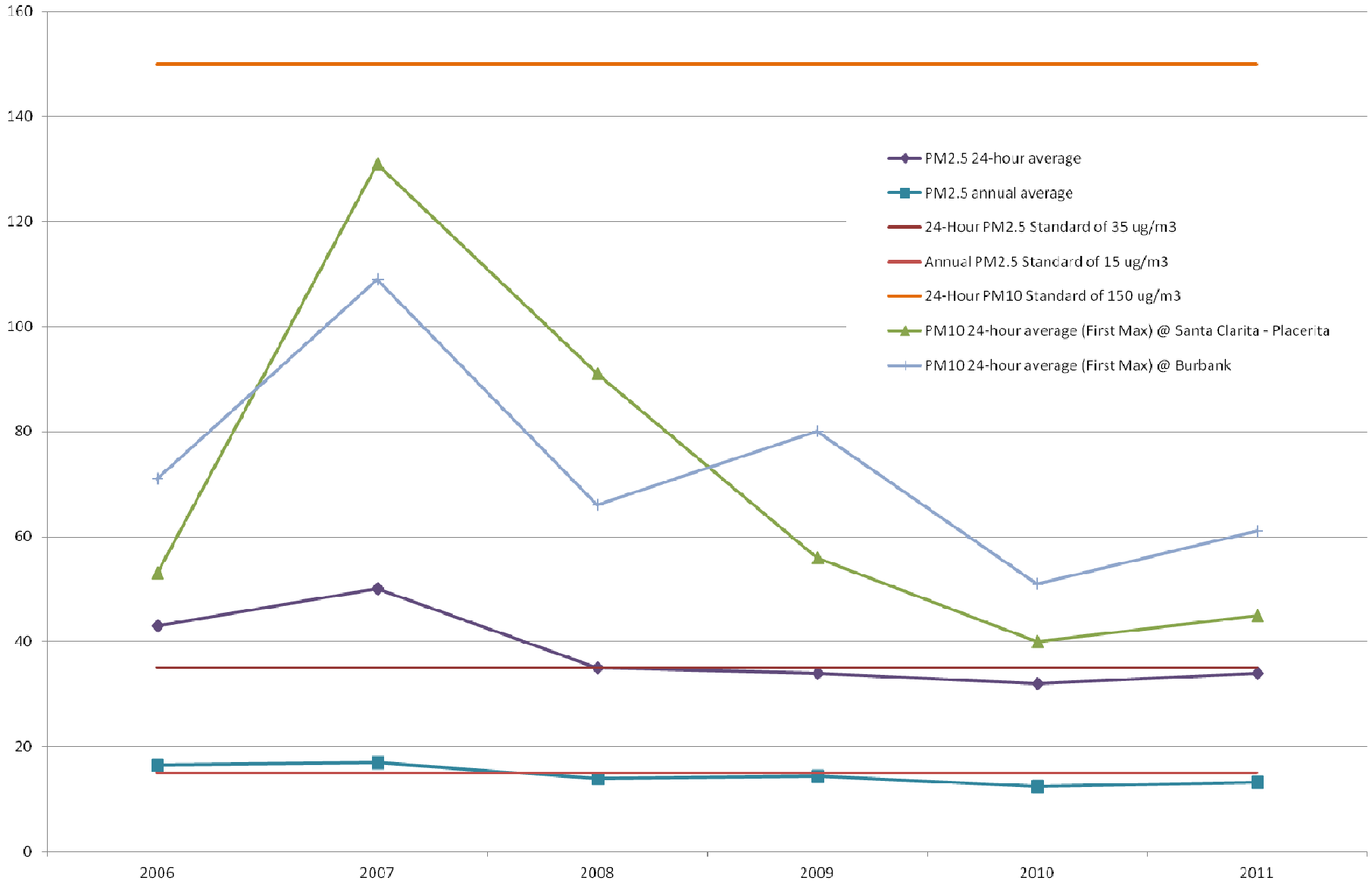


Figure 4. Ambient $PM_{2.5}$ and PM_{10} Data at Burbank and Santa Clarita – Placerita Monitoring Stations

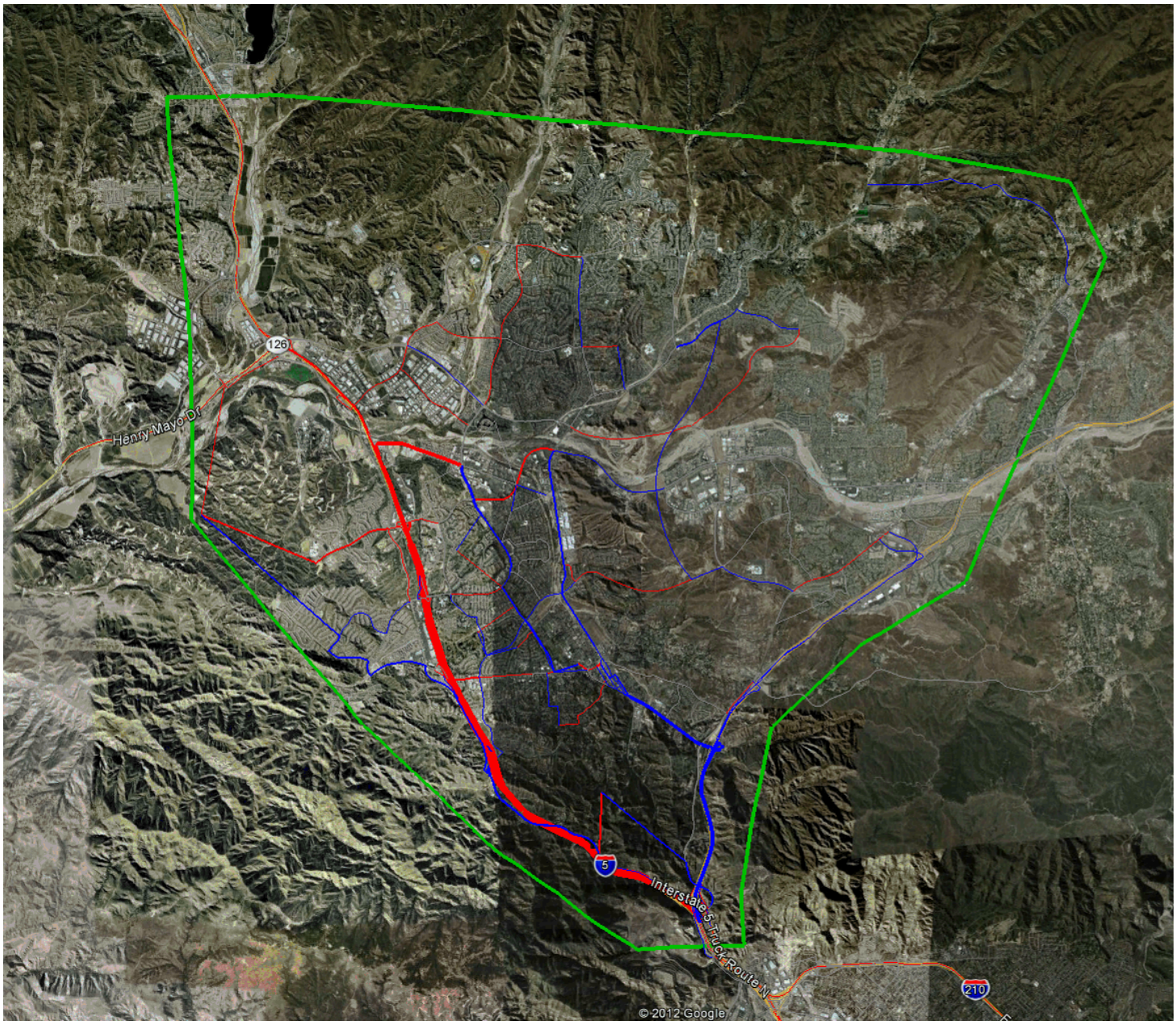


Figure 5. Limits of surrounding area